WHAT IS CLAIMED IS:

- 1. \ An inflatable member formed by the process, comprising:
- a) mixing a soft polymer with a multifunctional agent to form a compound;
 - b) \ extruding the compound into the inflatable member; and
- c) crosslinking the inflatable member, so that the inflatable member exhibits compliant radial expansion to a desired working diameter within a first pressure range, and substantially less expansion above the first pressure range.
- 2. The inflatable member of claim 1, wherein the inflatable member expands to the working diameter at an inflation pressure of less than about 15 atm.
- 3. The inflatable member of claim 1, wherein the polymer is selected from the group consisting of polyamide-ether block copolymer, polyether-ester block copolymer, polyether-urethane block copolymer, polyether-urethane block copolymer, polyether-urethane block copolymer, polyolefin, and polyolefin block copolymer.
- 4. The inflatable member of claim 1, wherein the polymer has a glass transition temperature of about 20 ° C to about 60 ° C.

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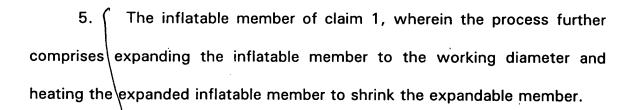
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- 6. The inflatable member of claim 5 wherein the inflatable member is heated to a temperature higher than the glass transition temperature of the polymer.
- 7. A method for forming a growth controlled formed-in-place inflatable member, comprising:
- a) mixing a soft polymer with a multifunctional agent to form a compound;
- b) extruding the compound into the inflatable member with a nominal diameter; and
- c) crosslinking the inflatable member with radiation prior to expansion thereof.
 - 8. The method of claim 7, further comprising:
 - a) expanding the cross linked inflatable member; and
- b) heating the expanded inflatable member to a temperature greater than a glass transition temperature of the polymer to shrink the inflatable member to its nominal diameter.

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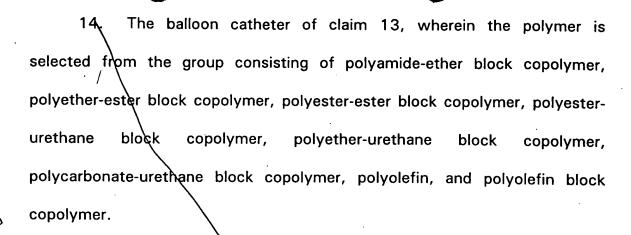
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A balloon for a catheter, comprising a soft polymer blended and crosslinked with a multifunctional agent, so that the balloon exhibits compliant radial expansion to a desired working diameter within a first pressure range, and substantially less expansion above the first pressure range.

- 10. A balloon for a catheter, comprising longitudinally extending stiffening zones circumferentially disposed on at least a section of the balloon, which expand with adjacent portions of the balloon such that the balloon section expands to a substantially cylindrical configuration.
- 11. The balloon catheter of claim 10 wherein the longitudinally extending stiffening zones comprise a polymeric material coextruded as an intermittent first layer of the balloon, wherein the stiffening zone polymeric material has a higher Shore durometer hardness than a polymeric material forming a second layer of the balloon.
- 12. The balloon catheter of claim 10 wherein the longitudinally extending stiffening zones comprise cross-linked polymeric material.
- 13. The balloon catheter of claim 12, wherein the balloon comprises a polymer having a glass transition temperature of about 20 ° C to about 60 ° C.

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15. The balloon catheter of claim 10 wherein the longitudinally extending stiffening zones are symmetrically spaced and configured to control axial growth of the balloon during inflation thereof.

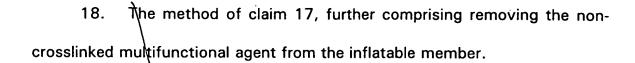
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- 16. The balloon catheter of claim 10 wherein the stiffening zones define in part an outer most edge of the expanded balloon.
 - 17. A method for forming an inflatable member, comprising:
- a) mixing a soft polymer with a multifunctional agent to form a compound;

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- b) forming the compound into a tubular member;
- c) placing the tubular member in a mold having circumferentially spaced longitudinal windows;
 - d) expanding the tybular member in the mold; and
- e) irradiating the mold to selectively crosslink portions of the tubular member at the longitudinal windows.

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- 19. The method of claim 17, wherein the step of expanding the tubular member comprises expanding the tubular member to a high blow up ratio of about 6 to about 8.
- 20. The method of claim 17 including before (c) placing the tubular member in a first mold, and expanding the tubular member in the first mold.
- 21. A balloon catheter comprising a balloon having a coating of crosslinked circumferentially spaced longitudinal zones configured to control axial growth.
- 22. A method for forming a dimensionally stable and growth controlled inflatable member, comprising:
- a) expanding a tubular member in a mold to form an inflatable member;
- b) coating the inflatable member with one or more longitudinally extending stripes of a crosslinkable material on at least the working length of the inflatable member; and
- c) irradiating the stripes to crosslink the crosslinkable material.

- 23. A method for forming a dimensionally stable and growth controlled inflatable member, comprising:
- a) coating a tubular member with one or more longitudinally extending stripes of a grosslinkable material; and
- b) irradiating the stripes to crosslink the crosslinkable material; and
- c) expanding the irradiated tubular member in a mold to form the inflatable member.